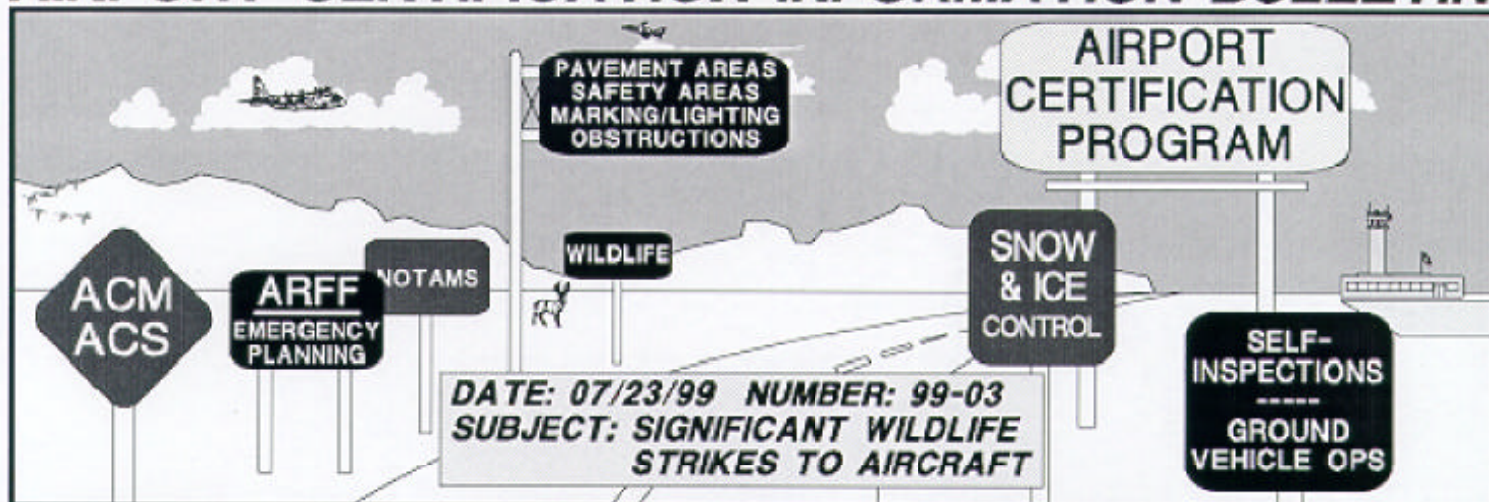


AIRPORT CERTIFICATION INFORMATION BULLETIN



Attached is a report titled ***SOME SIGNIFICANT STRIKES TO CIVIL AIRCRAFT IN THE UNITED STATES***. The document is an excellent synopsis of significant strikes to aircraft found in the FAA Wildlife Strike Database. The report was compiled by the USDA National Wildlife Research Center, and is useful in showing the effect of wildlife strikes on flight, the species encountered, and resulting damage.

Certificated airport operators are reminded of the requirement to take action to alleviate wildlife hazards on their airports. As the fall migratory season approaches, we request that you make an extra effort to continuously monitor conditions at your airport, both landside and airside, for wildlife attractions. Please pay particular attention to ponds, detention and retention basins, streams, and ditches, all of which may be attractive to waterfowl. USDA wildlife biologists are available to assist certificated airports with wildlife hazard issues. Please contact us if you need information regarding the USDA wildlife biologist for your area.



Damage resulting from a strike involving several Canada geese.



Aircraft accident that followed a strike involving Canada geese on takeoff roll.



Mallard ducks on an airport owned/maintained pond.



Canada geese on an airport owned/maintained retention pond.



Jet engine damage following bird ingestion.



Gulls feeding/loafing at a municipal landfill site near an airport.

03/22/99

**SOME SIGNIFICANT STRIKES TO CIVIL AIRCRAFT
IN THE UNITED STATES, 1998**

**Sandra Wright, Manager, FAA Wildlife Strike Database
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The U.S. Department of Agriculture in cooperation with the FAA, is compiling a database of all bird/wildlife strikes to U.S. civil aircraft and to foreign carriers experiencing strikes in the U.S. We currently have about 23,000 strikes in the database, 1990-1998, but estimate that is only 20% of what actually occurred. As you can see by the following examples, bird/wildlife strikes can have serious impacts on aircraft. To report a strike or obtain more information, visit, www.birdstrike.org

Date: 04 January 1998
Aircraft: B-737
Airport: Salt Lake City Intl. Airport (ID)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Large bird
Comments from Report: Significant damage to #1 engine. Engine ran rough until touchdown. Multiple bird strikes.

Date: 09 January 1998
Aircraft: B-727
Airport: Houston Intercontinental (TX)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine, radome, right wing
Wildlife Species: Snow geese suspected
Comments from Report: Aircraft was climbing through 3,000' when a flock of birds was encountered. Three to five birds were ingested. Engine lost all power and was destroyed, radome was torn from the aircraft and leading edges of both wings were damaged, pitot tube for first officer was torn off. Intense vibration in airframe and noise level in cockpit increased to the point that communication between crew members became difficult. Emergency was declared. Flight returned safely to Houston.

Date: 23 January 1998
Aircraft: Cessna 208
Airport: Salt Lake City Intl. Airport (ID)
Phase of Flight: Approach
Effect on Flight: Unknown
Damage: Stabilizer & elevator
Wildlife Species: Bird (probably a goose)
Comments from Report: Aircraft had a bird strike which jammed the elevator. Pilot landed safely using power and elevator trim. Bird hit the end of the left stabilizer, peeled back some skin which jammed the elevator in the neutral position.

Date: 28 January 1998
Aircraft: Cessna 340
Airport: Wagoner Airstrip Airport (OK)
Phase of Flight: Landing roll
Effect on Flight: Destroyed aircraft
Damage: Nose gear, fuel tank
Wildlife Species: Deer
Comments from Report: Aircraft struck 2 deer on landing, the gear collapsed and the fuel tank was ruptured resulting in a fire which destroyed the aircraft.

Date: 29 January 1998
Aircraft: Cessna 500
Airport: Horseshoe Bay Airpark Airport (TX)
Phase of Flight: Landing roll
Effect on Flight: Unknown
Damage: Fuel tank
Wildlife Species: Deer
Comments from Report: Aircraft hit a deer on landing. The fuel tank was punctured, spilling 200 gallons of fuel.

Date: 3 February 98
Aircraft: Cessna Citation
Airport: Watsonville (CA)
Phase of Flight: Take-off (rotation)
Effect on Flight: Engine shut down
Damage: Engines #1 and 2, wing, fuselage, tail
Wildlife Species: Gulls
Comments from Report: Flew through a flock of 20 gulls and ingested 1 into right engine causing it to seize. No injuries. Replaced right engine, 4 fuselage windows, left leading edge and de-ice boot, both heated leading edges, large fuselage panel and 3 other wing/fuselage panels. Time out of service 10 weeks, cost over \$470,000.

Date: 10 February 1998
Aircraft: Bell 206 helicopter
Airport: Nearest town - Scappoose (OR)
Phase of Flight: En route
Effect on Flight: Precautionary landing
Damage: Windshield
Wildlife Species: Mallard
Comments from Report: A news helicopter reported a bird strike 3-5 miles southeast of Scappoose, OR. A mallard came through the windshield. No injuries.

Date: 24 February 1998
Aircraft: B-727
Airport: Austin Bergstrom Intl. (TX)
Phase of Flight: Climb
Effect on Flight: Engines shut down, precautionary landing
Damage: Engine
Wildlife Species: Large birds
Comments from Report: #1 engine compressor stalled then seized. Engine was replaced. Time out of service 15 hrs, cost \$5 million.

Date: 24 February 1998
Aircraft: B-747
Airport: Nairobi Jomo Kenyatta Airport*
Phase of Flight: Climb
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Lappet-faced vulture
Comments from Report: Engine had extensive damage and may not be repairable. Cost \$3.7-4.0 million. Out of service about 240 hours.

Date: 6 March 1998
Aircraft: B-727
Airport: Boise Air Terminal (ID)
Phase of Flight: Take-off
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Bird
Comments from Report: Bird was ingested into engine which had an uncontained failure. Engine was shut down and the aircraft landed without incident. Runway was closed for about 1 hr. due to fan blade parts on runway.

Date: 09 March 1998
Aircraft: Merlin IV
Airport: Denver Intl. (CO)
Phase of Flight: Approach
Effect on Flight: Unknown
Damage: Windshield
Wildlife Species: Bird
Comments from Report: While inbound to Denver, pilot reported a bird strike on the windshield which shattered. Pilot reported he was okay, but had taken glass in the face.

Date: 13 March 1998
Aircraft: B-727
Airport: Valencia Intl. (Venezuela)*
Phase of Flight: Climb
Effect on Flight: Engines shut down, Precautionary landing
Damage: Engine
Wildlife Species: Vulture
Comments from Report: On climb-out, pilot saw a large black bird pass over top of the cockpit (pilot ducked). It struck #2 engine causing severe vibrations. Crew secured engine, dumped 12,000 pounds of fuel, declared an emergency and landed at Valencia. Engine was severely damaged. Time out of service 42 hours. Cost unknown.

Date: 24 March 1998
Aircraft: B-737
Airport: En Route from Texas to North Carolina
Phase of Flight: En Route
Effect on Flight: Unknown
Damage: Radome
Wildlife Species: Goose
Comments from Report: Aircraft struck a goose at 17,000 feet. Landed with an engine cowling missing. Virginia State Police were searching for the cowling.

Date: 04 April 1998
Aircraft: MD-80
Airport: La Guardia (NY)
Phase of Flight: Take-off (rotation)
Effect on Flight: Precautionary landing
Damage: Radome
Wildlife Species: Canada geese
Comments from Report: The aircraft struck multiple geese at rotation. Radome had a large hole. The aircraft had an air speed problem. Flight was diverted to Newark.

Date: 07 April 1998
Aircraft: Cessna 172
Airport: Mallards Landing (GA)
Phase of Flight: Take-off
Effect on Flight: Aborted take-off
Damage: Aircraft destroyed
Wildlife Species: Deer
Comments from Report: Deer crossed in front of aircraft which was on take-off with nose gear up. Aircraft swerved to avoid a deer, ran off the runway, flipped over and was destroyed. Pilot was injured.

Date: 15 April 1998
Aircraft: B-727
Airport: Dane Co. Regional (WI)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Small bird
Comments from Report: Damaged C1 fan beyond limits. Removed and replaced engine. Time out of service 48 hrs.

Date: 28 April 1998
Aircraft: Piper Cherokee
Airport: Vandenburg (FL)
Phase of Flight: Unknown
Effect on Flight: Crash
Damage: Fuel system
Wildlife Species: Unknown bird
Comments from Report: During a training flight, the aircraft struck a bird which damaged the fuel system. The aircraft experienced fuel starvation and subsequently crashed into a field.

Date: 03 May 1998
Aircraft: B-767
Airport: Dallas-Ft. Worth (TX)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Major vibration after impact during climb power setting. Engine power reduced to idle and vibration was minimal. Immediate landing with engine at idle and shut down exiting runway.

Date: 07 May 1998
Aircraft: B-727
Airport: Colorado Springs Metro (CO)
Phase of Flight: Climb
Effect on Flight: Engine shut down, precautionary landing
Damage: Radome, wing, fuselage and engine
Wildlife Species: Canada geese (6 or more)
Comments from Report: Severe damage to #3 engine, all inlet guide vanes, all 1st and 2nd stage compressor blades, 1st stage stator vanes, hole in anti-ice bleed air duct, blade exited engine case, oil cooler broke due to vibration. Radome cracked, wing-tip had minor damage. Time out of service 98 hrs. NTSB investigating. Cost \$1.4 million.

Date: 11 May 1998
Aircraft: B-747
Airport: Unknown (Buenos Aires to Miami)
Phase of Flight: Unknown
Effect on Flight: None
Damage: Radome, wing, fuselage and engine
Wildlife Species: Unknown bird
Comments from Report: Crew was unaware bird strike occurred. Damage found during maintenance post flight inspection. Damage pattern indicates bird impacted engine cone and separated into 2 parts, damaging compressor blades in 2 areas 180 degrees apart. Nose cone and 12 compressor blades were damaged. Time out of service 14 hrs. Cost was \$132,000.

Date: 13 May 1998
Aircraft: F-16C
Airport: near Ainsworth (NB)
Phase of Flight: En Route
Effect on Flight: Pilot ejected
Damage: Canopy shattered, forward fuselage destroyed, engine
Wildlife Species: American white pelican
Comments from Report: Aircraft struck a minimum of 5 pelicans causing structural failure of the forward fuselage, penetration of windscreen and engine ingestion. Pilot ejected at 500 ft and suffered major injuries from the impact of birds crashing through the windscreen. Aircraft was involved in a two-plane low-level training mission.

Date: 25 May 1998
Aircraft: MD-80
Airport: Seattle-Tacoma Intl. (WA)
Phase of Flight: Descent/Approach
Effect on Flight: Not reported
Damage: Fuselage
Wildlife Species: Eagle
Comments from Report: Considerable damage to the fuselage aft of radome.

Date: 28 May 1998
Aircraft: B-767
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine and wing
Wildlife Species: Canada geese (2-10)
Comments from Report: #2 engine had fan blades damaged and there was a hole in the right flap. Aircraft immediately returned to JFK and landed without incident.

Date: 31 May 1998
Aircraft: Piper Cherokee
Airport: Sikeston (MO)
Phase of Flight: Landing roll
Effect on Flight: Lost control of aircraft
Damage: Not reported - substantial
Wildlife Species: Deer
Comments from Report: Pilot tried to avoid striking a deer on landing, lost control and struck a tree. Aircraft had substantial damage and pilot was injured.

Date: 02 June 1998
Aircraft: B-747
Airport: Not reported
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Bird
Comments from Report: On climb out, suspected bird strike on #3 engine fan cowling. The cowling broke free, damaging the wing leading edge and upper surface, pneumatic ducting, generator feeder cables and leading edge flap. Time out of service 336 hrs.

Date: 04 June 1998
Aircraft: Cessna Citation
Airport: Jackson Intl. (MS)
Phase of Flight: Take-off (rotation)
Effect on Flight: Power pulled back 100%, precautionary landing
Damage: Engine
Wildlife Species: Medium bird
Comments from Report: Pilot declared an emergency and landed safely after ingesting a bird on take-off. Time out of service is estimated at 1 week. Cost of repairs \$200,000.

Date: 18 June 1998
Aircraft: Unknown
Airport: Portland Intl. (OR)
Phase of Flight: Unknown
Effect on Flight: Unknown
Damage: Unknown
Wildlife Species: Great blue heron
Comments from Report: Traveling passenger reported a heron falling from the sky. It landed on his car in an airport parking lot. Bird showed evidence of strike with an aircraft, though no strikes were reported. Windshield on his car was shattered.

Date: 28 June 1998
Aircraft: B-737
Airport: Norfolk Intl. (VA)
Phase of Flight: Take-off
Effect on Flight: Engines shut down, precautionary landing
Damage: Engine
Wildlife Species: Gull
Comments from Report: One gull caused the aircraft to make a precautionary landing. There was smoke in the cockpit and vibration. Three pairs of fan blades were replaced in #2 engine.

Date: 05 July 1998
Aircraft: Piper Comanche
Airport: Fort Myers (FL)
Phase of Flight: En route
Effect on Flight: Other
Damage: Windshield
Wildlife Species: Double-crested cormorant
Comments from Report: Pilot never saw bird. Cormorant penetrated the windshield. Pilot sustained facial lacerations from the Plexiglas windshield.

Date: 13 July 1998
Aircraft: B-757
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Hawk
Comments from Report: At 600 ft agl, a bird was ingested into left engine. Tower observed flames coming from engine tailpipe. Aircraft returned and landed without incident with 54 passengers and 33,000 lbs. of fuel. Flames were extinguished quickly and the aircraft taxied to the gate without further incident. Outboard portion of at least 4 blades was damaged, two significantly. No engine vibration.

Date: 14 July 1998
Aircraft: B-737
Airport: Nashville Intl. (TN)
Phase of Flight: Take-off (rotation)
Effect on Flight: None
Damage: Engine
Wildlife Species: Small to medium bird
Comments from Report: Ingested 1 bird at rotation. Caused odor in cabin. Engine ran normally. On arrival at Midway, mechanic found several damaged fan blades.

Date: 19 July 1998
Aircraft: B-737
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Climb
Effect on Flight: Reduced engine power, precautionary landing
Damage: Engine
Wildlife Species: Vulture
Comments from Report: Crew saw a flock of vultures prior to impact of 1 or more birds in the vicinity of the #1 engine. Heard impact and smelled freshly baked bird throughout entire cockpit/cabin. Retarded #1 throttle to near idle. Emergency was declared and returned to land uneventfully at DFW.

Date: 22 July 1998
Aircraft: Beechcraft-58
Airport: Antrim County (MI)
Phase of Flight: Landing roll
Effect on Flight: Not reported
Damage: Engines, props, landing gear and flaps
Wildlife Species: White-tailed deer
Comments from Report: Deer came out on runway. Each prop hit a deer cutting them in half, knocking one into left gear and left flap. The other deer went under right wing striking right flap. Time out of service 1 month, cost \$33,000.

Date: 22 July 1998
Aircraft: MD-80
Airport: Burbank (CA)
Phase of Flight: Take-off
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gulls
Comments from Report: An emergency landing was made after the jetliner ingested a gull into one of its two engines at lift-off. The damaged engine was shut down. 95 passengers had to be re-routed. Several flights were canceled.

Date: 7 August 1998
Aircraft: Dassault Falcon 20
Airport: Sioux Gateway (IA)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown
Comments from Report: Bird hit wing then went into #1 engine. Engine flamed-out with restart after hitting 1 bird. Debris from bird packed the air tubes through the engine and caused heat distress when engine relit. Cost \$59,000 to repair. Time out of service was 5 days.

Date: 8 August 1998
Aircraft: B-767
Airport: Philadelphia Intl. (PA)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gulls
Comments from Report: Five blades were damaged. Evidence of core ingestion.
Time out of service was 8 hrs.

Date: 11 August 1998
Aircraft: B-737
Airport: Philadelphia Intl. (PA)
Phase of Flight: Take-off
Effect on Flight: Not reported
Damage: Engine
Wildlife Species: Canada Geese
Comments from Report: #1 engine totaled. Aircraft out of service 36 hours.

Date: 15 August 1998
Aircraft: Jetstream-31
Airport: Altoona-Blair County (PA)
Phase of Flight: Landing roll
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Doves & killdeer (22)
Comments from Report: Engine was removed for overhaul. Outbound flight canceled, 17 passengers displaced. Time out of service 24 hours. Cost \$56,000.

Date:	20 August 1998
Aircraft:	Airbus 300
Airport:	Dhaka**
Phase of Flight:	Take-off
Effect on Flight:	Aborted take-off
Damage:	Landing gear
Wildlife Species:	Kite
Comments from Report:	A fire was started in the back wheels when a bird (kite) swooped down from the sky just as aircraft was about to leave ground. Passengers were evacuated and firemen put out flames. Aircraft was out of service for a few days. Airport officials said 38 flights did not operate from the time of the accident at 0730 until 1800 when the runway was clear.

Date:	25 August 1998
Aircraft:	ATR-42
Airport:	Regan Washington National (DC)
Phase of Flight:	Approach
Effect on Flight:	None
Damage:	Fuselage
Wildlife Species:	Unknown (large white)
Comments from Report:	Three holes in bottom of fuselage. Landed without incident.

Date:	29 August 1998
Aircraft:	B-747
Airport:	Unknown
Phase of Flight:	Unknown
Effect on Flight:	None
Damage:	Engine
Wildlife Species:	Unknown
Comments from Report:	Fan blades were damaged. Evidence of strike found on transit check. Flight crew was unaware of the strike. Time out of service was 48 hrs. Cost of repair \$75,000.

Date:	29 August 1998
Aircraft:	BE-55
Airport:	Quad City (IL)
Phase of Flight:	Touch and go
Effect on Flight:	Aborted Take-off
Damage:	Engines, windshield, wings, landing gear & fuselage
Wildlife Species:	Canada geese
Comments from Report:	Aircraft struck a flock of geese while practicing touch and go landings at night. Windshield broke and cut the pilot.

Date: 31 August 1998
Aircraft: Cessna 550
Airport: Renton Municipal Airport (WA)
Phase of Flight: Landing flare
Effect on Flight: None
Damage: Engines, wings, landing gear
Wildlife Species: Canada geese (5-6)
Comments from Report: Several geese were sleeping on the runway. Wings and flaps were dented and had holes in them. Fan blades were damaged in #1 engine. Engine was removed and sent to P&W for inspection.

Date: 6 September 1998
Aircraft: Saab-340
Airport: None (CA)
Phase of Flight: En Route
Effect on Flight: Precautionary landing
Damage: Engine, radome, windshield, nose, prop, wing, tail, fuselage
Wildlife Species: Geese/ducks
Comments from Report: Left window covered 85% with blood & bird guts. Window pressure plate damaged, radome caved in. Altitude 12,000 msl.

Date: 18 September 1998
Aircraft: B-737
Airport: None (CA)
Phase of Flight: Approach
Effect on Flight: None
Damage: Engine, fuselage
Wildlife Species: Gulls
Comments from Report: Two birds were struck. One gull was ingested in #2 engine causing vibration. Entire fan assembly was replaced. Cost approximately \$108,500 for repairs. Time out of service about 6 hours.

Date: 22 September 1998
Aircraft: Cessna 500
Airport: St. Paul Downtown (MN)
Phase of Flight: Take-off
Effect on Flight: Aborted take-off
Damage: Engine
Wildlife Species: American kestrel
Comments from Report: Five blades were damaged. Time out of service was 48 hrs.
Cost of repair \$16,000.

Date: 23 September 1998
Aircraft: MD-80
Airport: La Guardia Intl. (NY)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown
Comments from Report: Hit a small flock of birds at night. One hit the clearview window. One or more were ingested in #1 engine causing broken compressor blades and damaging the shroud.

Date: 25 September 1998
Aircraft: Dassault Falcon 20
Airport: Birmingham Intl. (AL)
Phase of Flight: Climb
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Unknown
Comments from Report: Hit unknown number of birds at night. One or more were ingested in #2 causing vibration and 80% thrust loss. Aircraft returned to the airport and shut the engine down after landing. Two blades were damaged. Time out of service 168 hours and cost was \$131,000.

Date: 29 September 1998
Aircraft: B-747
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Climb
Effect on Flight: Precautionary landing, engine shut down
Damage: Engine
Wildlife Species: Gulls
Comments from Report: Engine was shut down because of vibration. Dumped 120,000 lbs. of fuel and landed uneventfully. Uncontained engine failure. Cost \$136,858. Time out of service was 78 hrs.

Date: 15 October 1998
Aircraft: DC-10
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Take-off
Effect on Flight: Engine shut down and precautionary landing
Damage: Engine
Wildlife Species: Herring gull
Comments from Report: Pilot reported 1 bird was ingested at rotation, heard a loud thud and was losing power to #3 engine. Another pilot on the ground saw the engine flame out. Engine parts were recovered from the ground along with the carcass. Substantial damage to the engine. About 26,000 pounds of fuel were dumped over the local community and a hazmat team was dispatched. Runway was closed for approximately 30 minutes. 220 passengers were inconvenienced.

Date: 19 October 1998
Aircraft: BA -31 Jetstream
Airport: Binghamtom regional Airport (NY)
Phase of Flight: Climb
Effect on Flight: Precautionary landing & engine shut down
Damage: Engine
Wildlife Species: Gull
Comments from Report: Pilot reported 1 bird was ingested at rotation. There was a partial loss of power. Aircraft landed safely and shut down engine on taxiway. Crew noticed smoke and flame then discharged fire bottle. Passengers and crew were evacuated. No injuries.

Date: 19 October 1998
Aircraft: Fokker 100
Airport: Dallas Fort Worth (TX)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Turkey vulture
Comments from Report: Bird hit #2 engine. Damage was noted immediately. Reduced power to idle and made precautionary landing. Landing was made overweight which required additional inspections. Engine was replaced.

Date: 23 October 1998
Aircraft: Cessna Citation
Airport: Houston Intercontinental Airport (TX)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Wing, radome, tail, fuselage, windshield
Wildlife Species: Cranes
Comments from Report: Pilot reported a flock of about 30 cranes were encountered during climb. Several birds were struck. A precautionary landing was made to inspect aircraft. Aircraft was out of service for about 30 days and cost \$250,000 to repair.

Date: 04 November 1998
Aircraft: B-747
Airport: Cincinnati/Northern Kentucky Intl. (KY)
Phase of Flight: Climb
Effect on Flight: Engine shut down and precautionary landing
Damage: Engine
Wildlife Species: Snow goose
Comments from Report: A flock of snow geese caused engine damage soon after take-off. Parts of the aircraft rained down on Churchill Downs barn housing several valuable race horses.

Date: 07 November 1998
Aircraft: Cessna Citation
Airport: Fort Smith Regional (AR)
Phase of Flight: Take off
Effect on Flight: Engine shut down & precautionary landing
Damage: Engine, wing
Wildlife Species: Doves
Comments from Report: A large flock of doves flew into the aircraft at rotation speed. One engine failed. An emergency landing was made. Leading edge of right wing was also damaged. Right engine fan was destroyed. Time out of service 24 hrs, cost of repair \$170,000.

Date: 09 November 1998
Aircraft: B-737-300
Airport: Los Angeles International (CA)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine,
Wildlife Species: Rock Doves
Comments from Report: A large flock of doves flew into the aircraft at rotation. At least 12 were struck. An emergency landing was made. Several engine fan blades were damaged, other parts were struck but the damage was undetermined at time of report. The cost of parts was \$63,500.

Date: 10 November 1998
Aircraft: Aero Commander 500
Airport: Philip Billard Municipal (KS)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine, windshield, tail, landing gear
Wildlife Species: Geese
Comments from Report: Four geese struck the aircraft, pilot declared an emergency and returned to land at Billard Airport. The copilot received injuries to hand and arm. Pilot temporarily lost control. Major damage to aircraft. Repair cost unknown at this time. Time out of service 2 months and counting. Parts not available as of 1-22-99.

Date: 13 November 1998
Aircraft: B-737
Airport: Albany County (NY)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Snow buntings
Comments from Report: A flock of buntings was ingested into the # 1 engine on rotation causing a booming sound and flames streaking from the engine. The smell of smoke entered the cabin and the aircraft declared an emergency, returning to the airport. Ninety-one passengers had to be re-booked on other flights. The aircraft was out of service for 12 hours.

Date: 24 November 1998
Aircraft: B-737
Airport: Baltimore-Washington Intl. (MD)
Phase of Flight: Climb
Effect on Flight: Engine shut down and precautionary landing
Damage: Engine
Wildlife Species: Geese
Comments from Report: Aircraft made an emergency landing after ingesting a goose into the right engine. One passenger reported, "The plane began jerking around and vibrating and everything started to smell like smoke." The pilot had to shut the engine down and land with one engine. Emergency vehicles were standing by and an inspection was made before the aircraft was allowed to taxi to the gate. Over 100 passengers had to be rebooked on other flights. The engine was replaced.

Date: 24 November 1998
Aircraft: Lancair (experimental)
Airport: Camarillo Airport (CA)
Phase of Flight: Climb
Effect on Flight: Precautionary Landing
Damage: Windshield
Wildlife Species: Unknown
Comments from Report: Shortly after take-off a bird went through the windshield, striking the pilot in the eye. With impaired vision, the pilot returned to land safely at airport.

Date: 6 December 1998
Aircraft: B-727
Airport: Southwest Florida Intl. (FL)
Phase of Flight: Take-off rotation
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown
Comments from Report: Aircraft made an emergency landing after ingesting a bird into one of three engines. Pilot circled for 30 minutes to burn off some fuel as dumping it was not possible because the plane was not high enough. Additional fire and rescue crews were called to the scene. Engine had bent blades. All 145 passengers were place on other flights. No report was ever filed on this strike. Bird remains were sent to the Smithsonian for identification.

Date: 31 December 1998
Aircraft: MD-80
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Radome, nose, landing gear door
Wildlife Species: Canada goose
Comments from Report: Struck numerous geese shortly after take-off. Pilot circled to burn off some fuel before landing overweight but safely. Emergency equipment was at the runway. Aircraft was out of service 8 hours.

* American-based airline at a foreign airport.

** non US strikes included in report to provide additional examples of impact wildlife has on aviation